

Multi-parameter Water Quality Analyzer **U-50 series**

Structural Characteristics of the Halocline in Brackish Water

For the research of water characteristic / research of ecosystem.

Estuarine region of Yodogawa river in Osaka, Japan



1. About halocline

Halocline is the vertical zone in oceanic water column where concentration of salinity changes rapidly relative to depth. Salinity affects the density of seawater, which can affect the vertical stratification of the seawater.

In the estuaries region near the ocean, fresh water from river is reaching to the seawater, and halocline is formed as the salinity level of those waters are different. This water area is called brackish water region, and the halocline is unlikely to be collapsed since the retention of those waters are high, then totally different water quality environments are formed in the upper and lower layers separated by halocline.

Therefore, the understanding of halocline point and water qualities in the upper and lower layers are vital for the research of water characteristic or research of ecosystem in brackish water region.

HORIBA U-50 series can measure up to 11 parameters with maximum 30m cable and provide the great experience to measure the vertical profile and its structural water characteristics in brackish water region. U-50 employs salinity compensation for dissolved oxygen (DO) measurement and is fully suitable for the salinity water monitoring.

2. Measurement: Osaka Bay, Japan

Osaka Bay is a bay located in western Japan. As an eastern part of the Japan's Inland Sea, it is separated from the Pacific Ocean by a channel and from the neighbor western part of the Inland Sea by a strait. Japan 2nd biggest Industry area locates around Osaka Bay because there are skilled and plentiful workforce, many port facilities, efficient linkages and large local market. Osaka Bay is also well known as a rich fisheries although it has been industrialized. In order to conserve the rich fisheries and its ecosystem, investigating the vertical profile of water characteristics and determining the halocline point are thought to be important, and water quality-monitoring has been performed with HORIBA U-50 meter.

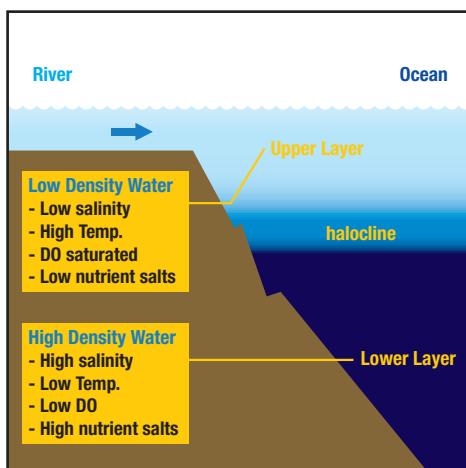


Fig.1 Diagram of halocline region



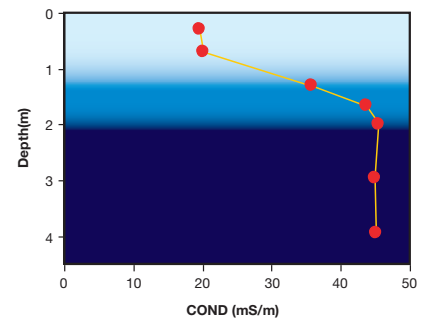
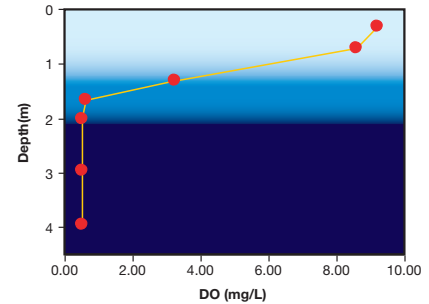
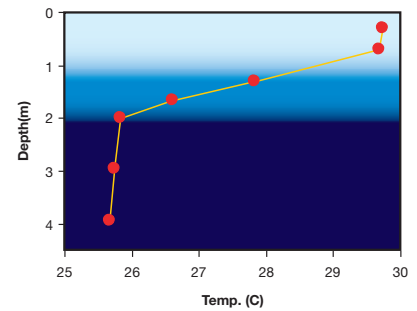
Image is for illustration purpose only

3. Water-quality testing

Temperature and DO are dropped down below the 1.5 meter depth. Oxygen is absorbed from the ambient, and temperature is increased in upper layer due to the ambient temperature; however, upper layer water is unlikely to be mixed with lower layer water due to the different salinity level. Conductivity is increased below the 1.5 meter depth since lower layer has higher salinity which is originally from seawater.

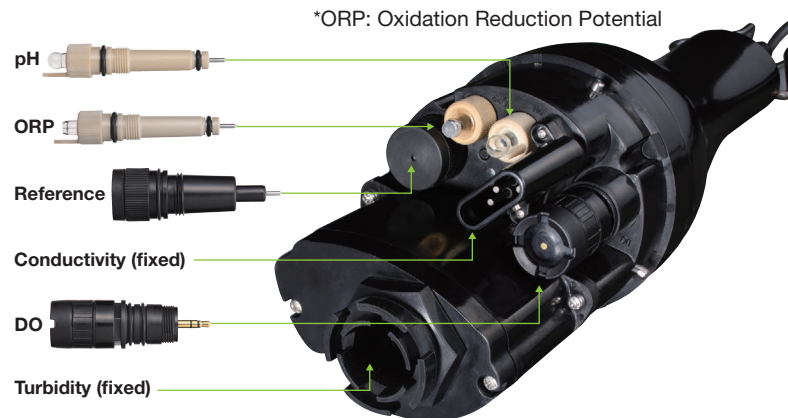
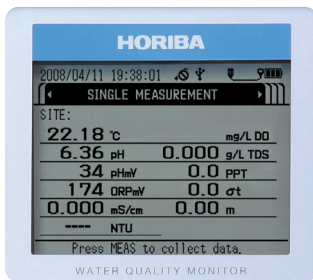
4. Conclusion

As the results stated above, it is determined that halocline is formed around 1.5 meter depth area at the time of monitoring, and this totally separates upper and lower layers with different water quality environments. From those water-quality monitoring result, HORIBA U-50 meter showed good enough performance to determine the structural characteristics of the halocline in brackish water.



Key features of U-50 series

- One-Hand operation for control unit.
- Salinity compensation for DO measurement.
- Salinity and Seawater specific gravity parameters are available.
- All 11 parameters are displayed on the LCD screen.
- Simultaneous ONE-POINT Calibration for multi-parameters. [pH, DO, conductivity, turbidity, and depth]
- Module sensors can be replaced individually. [pH, ORP, DO, reference]



The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System OHSAS18001. We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.



Please read the operation manual before using this product to assure safe and proper handling of the product.

- The specifications, appearance or other aspects of products in this catalog are subject to change without notice.
- Please contact us with enquiries concerning further details on the products in this catalog.
- The color of the actual products may differ from the color pictured in this catalog due to printing limitations.
- It is strictly forbidden to copy the content of this catalog in part or in full.
- The screen displays shown on products in this catalog have been inserted into the photographs through compositing.
- All brand names, product names and service names in this catalog are trademarks or registered trademarks of their respective companies.

HORIBA Advanced Techno

Head Office
31 Miyanonishi-cho, Kisshoin Minami-ku, Kyoto, Japan
Phone: 81 (75) 321-7184 Fax: 81 (75) 321-7291
<http://www.horiba-adt.jp>

Global Contact info

